

# ISSUE BRIEF

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# ACHIEVE

STATE OF CONNECTICUT OFFICE OF HEALTH CARE ACCESS

## Preventable Hospitalizations During the 1990s

### Introduction

“Preventable hospitalizations,” or “ambulatory care sensitive conditions” (ACSC) are diseases or disorders for which prompt and effective primary care followed by proper management of the condition by both patient and provider greatly reduces the likelihood of hospitalization. In Connecticut during FY 1999, there were 51,665 discharges for 24 conditions that the clinical literature has identified as ACSCs. This is 14% of all acute care hospital discharges, with total charges of nearly \$562 million.

Preventable hospitalization (PH) studies provide a number of insights about a health care delivery system and serve as a valuable tool for health care providers and public policymakers to:

- Assess the quality and effectiveness of the primary care delivery system.
- Isolate financial, socio-cultural, technical, and structural barriers to adequate primary care.
- Identify under-served geographic areas, systemic problems, and emerging needs.
- Monitor changes in the health care delivery system.
- Control health care expenditures by identifying and promoting the appropriate use of primary care and thus reducing the incidence of costly inpatient hospital care.
- Evaluate and plan the more efficient use of health care resources.

This report examines preventable hospitalization trends in Connecticut for Fiscal Years 1992 through 1999, a period of dynamic change in the state's health care delivery system. These trends illuminate shifts in the delivery and utilization of health care services and provide information about the extent of access to primary care. The spread of managed care along with demographic characteristics such as age and race are highlighted as factors that have affected the numbers of preventable hospitalizations.

In FY 1999, the elderly accounted for 14% of Connecticut's total population but 58% of all preventable hospitalizations. While Medicare reduces financial barriers to primary care for the elderly, they suffer more chronic ailments that make them less responsive to primary care. Because this study is concerned with the link between primary care and preventable hospitalizations, the analysis is almost exclusively focused upon discharges that are less than 65 years old.

Preventable hospitalization among senior citizens is examined separately in a section at the end of this report.

From FYs 1992-1993 to 1998-1999, the number of ACSC discharges under 65 years old and the PH rate per 1000 population declined dramatically (19% - See Table One).

Table One: Discharges for Ambulatory Care Sensitive Conditions (ACSC): Ages 0 - 64 years, FY's 1992 - 1999

ACSC	1992/3	1994/5	1996/7	1998/9
Bacterial Pneumonia	7,346	7,832	7,040	7,188
Asthma	7,477	7,965	7,684	6,781
Cellulitis	5,111	5,235	4,624	4,856
Heart Failure	3,643	3,855	3,701	3,954
Diabetes	3,440	3,394	3,431	3,280
Chronic Obstructive Pulmonary Disease	2,814	3,064	2,808	3,066
Dehydration	2,706	3,204	3,001	2,755
Infection	2,766	2,675	2,539	2,430
Convulsions	1,856	2,222	2,028	2,079
Angina	7,279	4,548	2,611	1,646*
Gastroenteritis	2,468	1,911	1,312	1,162
Status/Epileptic Convulsions	1,905	1,211	931	951
Pelvic Inflammation	1,651	1,461	1,074	945
Ear, Nose, and Throat Infections	915	863	658	571
Hypertension	453	426	420	449
Cancer	194	210	226	195
Failure to Thrive	244	223	180	166
Iron Deficiency (Pulmonary)	86	78	100	89
Immunization Related Conditions	141	131	105	89
Hypoglycemia	78	61	70	60
Nutrition Deficiency	201	60	48	40
Tuberculosis (Non-Pulmonary)	31	30	23	33
Syphilis	40	36	33	32
Totals	9	4	1	3
discharges ages 0 - 64 years	52,854	50,699	44,648	42,820
ACSC discharges per 1,000 population	10.0	10.0	9.3	9.2
	9.4	9.0	8.0	7.6

**Source:** State of CT Office of Health Care Access Inpatient Database.

To increase their statistical reliability, PH rates are based upon two years of data.

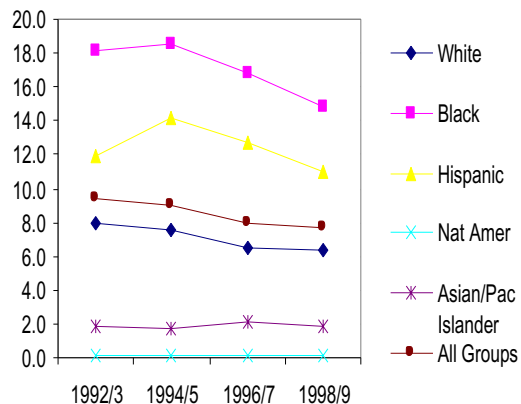
\*The number of angina cases declined due to changes in coding practices.

As a percentage of all hospitalizations, ACSCs declined moderately (8%) but this was because the number of total discharges for all diagnoses fell steeply (12%).

Putting these figures into comparative perspective, Connecticut's preventable hospitalization rates were similar to those for Massachusetts, which were 11.7% in 1992-1993 and 9% in 1995-1996.

## Who are the ACSC discharges among persons aged 0 – 64 years?

Figure One: Preventable Hospitalization Rate by Race, FY's 1992 - 9 (per 1,000 population)



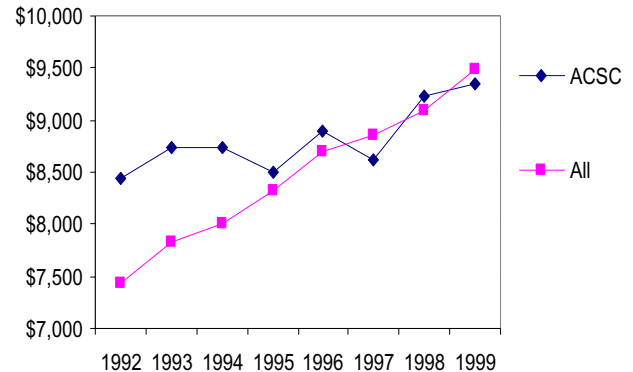
Although Whites represented the majority of preventable hospitalizations (65% in FY 1999), their proportion of total ACSC discharges was still less than their share of Connecticut's population (80%). Consequently, Whites, along with Asians and Pacific Islanders, and Native Americans all had PH rates that were below the aggregate average for all groups (Figure One). Conversely, African-Americans (17.4% of ACSCs but only 9.3% of Connecticut's population) and Hispanics (13.5% of ACSCs but 9.4% of Connecticut's population) had PH rates that were twice as high as those for Whites and well above the average for all groups. Gender was not a significant factor as preventable hospitalizations were divided about equally between men and women.

## The Cost of Preventable Hospitalizations among persons aged 0 – 64 years

In FY 1999, preventable hospitalizations of persons less than 65 years old generated nearly \$205 million in total hospital charges. Five ACSCs accounted for nearly two-thirds of this expense: Bacterial Pneumonia (20%), Heart Failure (16%), Asthma (11%), Chronic Obstructive Pulmonary Disease (10%), and Cellulitis (9%). Although preventable hospitalizations fell by 19% over the 1990s, total charges declined by a more modest 9.4%.

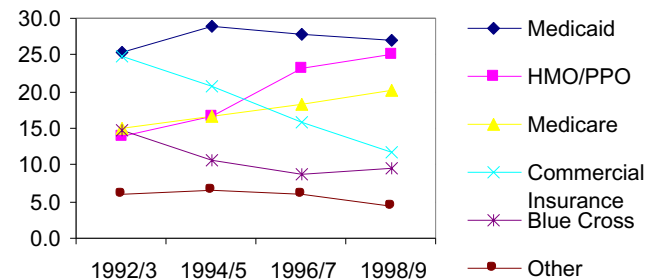
While the number of preventable hospitalizations and their total charges declined from FY 1992 to 1999, the average charge per discharge still increased, though at a slower rate than that for all discharges (11% versus 28% respectively). By the mid-1990s, these average charges converged due to their different rates of growth (Figure Two).

Figure Two: Average Total Charges for ACSC and All Discharges: Ages 0 - 64 years, FY's 1992 - 9



The reduction in the number of preventable hospitalizations and its associated total charges draws attention to two sets of changes that had profound effects upon Connecticut's health care delivery system. The first was the changing nature of primary payers for hospital costs, and specifically the decline of fee-for-service payers such as indemnity insurance and the growth of HMO/PPOs (Figure Three).

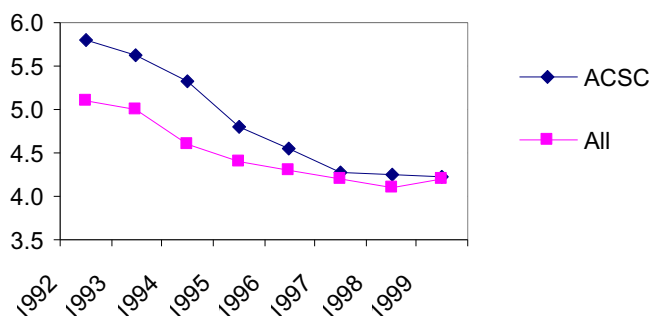
Figure Three: Primary Payer's Share of Total ACSC Charges: Ages 0 - 64 years, FY's 1992 - 1999



From FYs 1992 to 1998, HMO/PPO enrollment doubled to a total of 1.3 million state residents. Managed care organizations limit the utilization of expensive inpatient hospital care through a variety of mechanisms including gatekeepers, utilization review, and by promoting the use of primary care. The second series of changes that affected Connecticut's health care system included the establishment of Medicaid (FY 1995) and Medicare (FY 1996) managed care, which introduced cost controls and utilization reviews. At the end of the 1990s, two-thirds of Medicaid enrollees were in managed care programs, but far fewer Medicare enrollees were in such programs. By this time, Medicare, Medicaid, and HMO/PPOs were the primary payers for nearly three-quarters of all preventable hospitalization charges. Only about 6% could be considered uninsured.

Managed care had a pronounced effect upon the length of stay, which is a key factor in hospital costs. In the early 1990s, the average length of stay for preventable hospitalizations was significantly longer than that for all conditions combined (Figure Four). During the 1990s, medical advances and the growth of managed care contributed to a pronounced decline in the average length of inpatient hospital stays for all conditions as care increasingly shifted to outpatient primary care settings.

Figure Four: Average Length of Stay for ACSC and All Discharges: Ages 0 - 64 years, FY's 1992 - 9

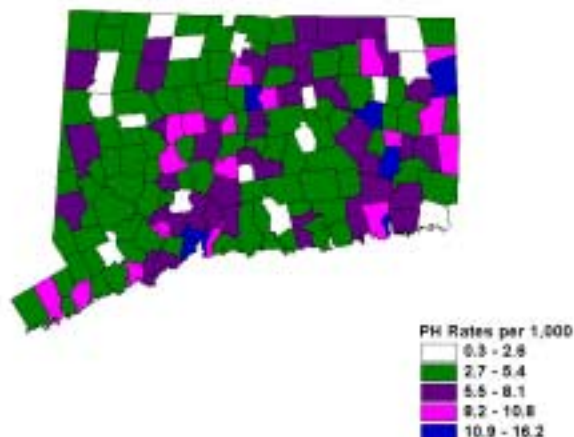


While the average length of stay for all conditions fell by 18%, preventable hospitalizations experienced an even steeper decline of 28%. By FY 1999, the difference in length of stay between ACSC discharges and all discharges had disappeared.

One aspect of preventable hospitalizations that did not change over the 1990s was the prevalence of emergency room care. From FY 1992 to 1999, nearly three-quarters of all ACSC discharges aged 0 – 64 years were admitted to the hospital through the ER. By contrast, only one-third of all discharges for that age group were admitted this way. Being admitted through the ER, ACSCs were likely to have received expensive emergency treatment rather than primary care.

### Geography of Preventable Hospitalizations in persons aged 0 – 64 years

The map reveals that preventable hospitalizations were particularly concentrated in urban areas. Higher PH rates indicate that towns had greater numbers of preventable hospitalizations relative to their population. PH rates for urban centers such as New Haven (16.2), New London (14.3), Hartford (14.0), Waterbury (10.7), Bridgeport (10.5), and New Britain (10), were among the highest rates in the state and were well above the statewide average of 5.4. Cities tend to have factors that are associated with preventable hospitalizations such as higher numbers of minorities and Medicaid-eligible people and large hospitals with substantial bed capacity. Windham (14.4) illustrates the importance of these factors for preventable hospitalizations because although it is not a city it does have a



high percentage of minorities and poor along with a hospital. Accounting for the prevalence of these groups, they may be underserved for primary care and hospital ERs, which are open 24 hours a day, may be more accessible and convenient. These groups may also have higher proportions of vulnerable populations, people who already have poor health status and more chronic illnesses and, therefore, may more likely require hospitalization. For the state as a whole, 60% of all towns were at or below the statewide average. In addition to Bethany (1.0) and Stonington (1.3), three of the lowest PH rates were the Litchfield County towns of Barkhamsted (.3), Colebrook (.8) and Morris (1.3).

In FYs 1998 and 1999, eight urban hospitals discharged over one-half of all preventable hospitalizations in Connecticut. This reinforces the idea that preventable hospitalizations were more prevalent in urban areas (Table Two). Interestingly, however, it was community hospitals such as Bradley Memorial (24%), CT Children's Medical Center (20%), Windham (17%), and Sharon (13%) that had the largest percentages of preventable hospitalizations as a share of their total discharges.

Table Two: Hospitals that Discharged One-Half of All Hospitalized ACSC's, Ages 0 - 64 years, FY's 1998/9

Hospital	Percent of Discharges
Yale-New Haven	14.7
Saint Francis	7.2
Hartford	6.0
Saint Raphael's	5.1
Bridgeport	4.9
New Britain	4.2
Lawrence and Memorial	4.1
Saint Vincent's	4.0

### Preventable Hospitalizations among Children (0 – 18 years) and Senior Citizens (65+ years)

Children and senior citizens have unique health care needs. Although most seniors have access to primary care through Medicare, they suffer from more chronic ailments that make them less responsive to this care. As a result in FY 1999, they accounted for 60% of all preventable hospitalizations and related total charges (\$357 million). Thus in comparison with all discharges under 65 years from FY 1992 to FY 1999, preventable hospitalizations among the elderly only declined by a modest 6.4%.

In addition to the aging process, studies suggest that increased out-of-pocket for senior citizens may also be a factor in this smaller decline. For FYs 1995/6, Connecticut's PH rates for both senior citizens (69.7) and children (6.7) were below those for Massachusetts, 78.2 for and 7.9 respectively. Children were 10% of all ACSC hospitalizations with total charges of over \$27 million (FY 1999). Asthma has been particularly prevalent

among children and accounted for one-third of their preventable hospitalizations. Although 27% of all Connecticut's children were minorities (1999), they represented about half of all preventable hospitalizations and over half of all asthma discharges.

Table Three: Top 5 Ambulatory Care Sensitive Conditions: Children (0 - 17 years) and Senior Citizens (65+ years), FY's 1998/9

ACSC	Children	Seniors
Heart Failure	-	17,622
Asthma	2,793	-
Bacterial Pneumonia	1,624	14,840
Chronic Obstructive Pulmonary Disease	-	7,526
Dehydration	1,192	4,223
Convulsions	678	-
Kidney/Urinary Infection	662	4,027
Total Discharges	9,937	58,706
ACSC's Percent of all discharges	7.5	21.5
Discharges per 1,000 population	5.8	62.6

## Conclusion

In Connecticut during the 1990s, the number of preventable hospitalizations and its associated costs declined significantly for children and adults, and more modestly for senior citizens. This reduction occurred as the state's health care delivery system was being transformed by the spread of public and private managed care, medical technology advances, and a shift to increased outpatient treatment. Age was most strongly associated with hospitalization for ACSCs because with aging, people become more susceptible to chronic illnesses and may be less responsive to primary care. It is not surprising, therefore, that changes in the health care delivery system brought steeper declines in the number of preventable hospitalizations for those less than 65. As a result, from FY 1992 to FY 1999, senior citizens increased from 53% to 58% of all discharges for ACSCs. Overall, the declining incidence of preventable hospitalizations suggests that Connecticut has fairly broad access to primary care. Its PH rates were similar to Massachusetts' for the 0 - 64 age group, and they were lower for senior citizens as well as children.

However, minorities continued to have much higher PH rates than whites. Minority children accounted for nearly one-half of all preventable hospitalizations for those who were under 18 years old. Preventable hospitalizations were more concentrated in urban areas due to the higher numbers of minorities and Medicaid-eligible people and the presence of large hospitals. Changes in the health care delivery system have significantly reduced the number of preventable hospitalizations but the continued prevalence of minority and Medicaid discharges suggest the need for further research to learn whether there are barriers (availability of physicians, clinic hours, financial, etc.) to effective primary care or problems affecting the ability of these groups to adhere to a treatment regimen.

<sup>1</sup> See Billings 1992. Of course, even good primary care will not prevent all hospitalizations for these conditions. The overall health of the patient and the severity of the illness are also factors.

<sup>2</sup> For clinical research on ambulatory care sensitive conditions, see Billings (1990 & 1992), Billings, Anderson, and Newman (1996), Peck (1986), Weissman, Gastonis, and Epstein (1992), and the U.S. Health Resources and Services Administration (1992). This current report on Connecticut replicates a series of studies conducted by the Massachusetts Division of Health Care Finance and Policy (1994, 1995, & 1998). It utilizes the same 24 ACSCs (and ICD-9-CM codes) for primary diagnosis that were used in the Massachusetts studies that were themselves drawn from Billings, et. al. Not all preventable hospitalization studies include all 24 conditions. For example, The Dartmouth Atlas of Health Care 1999 and Kozak, Hall, and Owings (2001) use only 12 conditions.

The source for all Connecticut inpatient data utilized in this report is the State of Connecticut Office of Health Care Access Inpatient Database.

<sup>3</sup> Massachusetts Division of Health Care Finance and Policy, *Preventable Hospitalization in Massachusetts*, (1994, 1995, & 1998).

<sup>4</sup> The hospital fiscal year is from October 1<sup>st</sup> through September 30<sup>th</sup>.

Significant changes include the state's deregulation of hospital prices and the elimination of the cap on negotiated managed care discount rates. This spurred development of managed care which in FY 2000 covered 43% of all state residents. In response to reimbursement changes and competition from independent ambulatory clinics, hospitals have had to restructure and put increased emphasis upon outpatient services. A final significant change has been the development and subsequent expansion of the HUSKY Program which provides insurance coverage for children and in 2001, their families.

<sup>5</sup> Massachusetts Division of Health Care Finance and Policy, op. cit. (1998).

<sup>6</sup> The figure does not include those classified as "other" which are about 2% of all discharges. In terms of gender, women accounted for slightly more than half of all ACSC discharges under 65 years from FY 1992 to 1999. This seems like a significant difference from their share (60%) of all discharges for this age group, however, their proportion returns to half when those hospitalized for childbirth are removed.

<sup>7</sup> Charges do not always reflect the amount that was actually paid. Under its current regulations, the Office of Health Care Access may only collect charges information.

<sup>8</sup> Connecticut Department of Insurance.

<sup>9</sup> While two-third of all Medicaid enrollees were in managed care programs, those still in fee-for-service Medicaid had greater health needs and generated two-thirds of Medicaid's total inpatient hospital charges.

<sup>10</sup> Preventable hospitalizations rates were derived for each town by dividing the number of ACSC discharges by the total population and then multiplying the quotient by 1000. The average for all towns was 5.4 and the standard deviation was 2.7. The map colors correspond to standard deviations (SD) above and below the mean: White is > one SD below the mean; Green is <= one SD below the mean; Plum is <= one SD above the mean; Pink is > one SD above the average but <= 2 SDs above it; Blue is more than 2 SDs above the mean. OHCA's inpatient database codes certain patient towns together and therefore they share the same PH rate: Cornwall and Warren; Griswold and Lisbon; Lyme and Old Lyme; and Stafford and Union. Excluded from the map are the 657 ACSC discharges who were either residents of other states or countries, or their place of residence was unknown.

<sup>11</sup> Kozak, Hall, & Owings, *Health Affairs* (2001).

<sup>12</sup> Massachusetts defined children as ages 0 - 17 years, while for this study 18 year olds were included in this category.

<sup>13</sup> See State of Connecticut Office of Health Care Access reports: "Asthma: A Growing Concern in Connecticut" (1997) and "Asthma Discharges FY 1998."